

Anti-tumoral activity of lipophilic Eucalyptus bark extracts, enriched on triterpenic acids, against breast cancer cells

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The agro-industrial exploitation of eucalyptus for pulp production generates large amounts of biomass residues, particularly bark. *Eucalyptus* spp. is the most important fiber source for pulp and paper production in southwestern Europe [1].

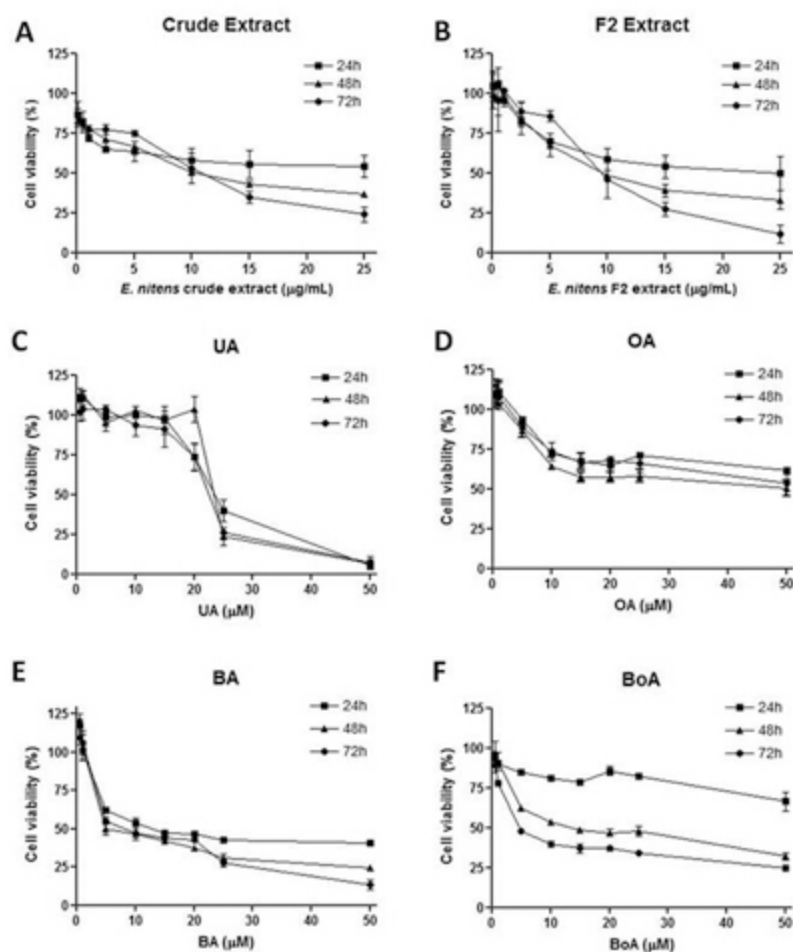


Fig. 1: Antiproliferative effect of *Eucalyptus ritens* Crude, F2 extracts and triterpenic acids on human breast cancer cells. Dose-response curves of *E. nitens* Crude (A) and F2 (B) extracts and UA (C), OA (D), BA (E) and BoA (F) treatment in MDA-MB-231 cells.

Eucalyptus spp. barks are an abundant source of several triterpenoids, mostly triterpenic acids (TAs), namely betulonic (BA), oleanolic (OA), ursolic (UA) and betulonic (BOA) acids [2]. These pentacyclic triterpenes have a broad spectrum of biological activities, being some of them considered promising anticancer drugs [3]. Therefore, the present work aims to characterize the anti-tumoral activity of pure TAs (UA, OA, BA and BOA) as well as total and fractionated (enriched on different TAs) *Eucalyptus nitens* outer bark derived extracts, in a breast cancer in vitro cell model. The crude and fractionated *E. nitens* outer bark extracts were previously chemically characterized [2]. Crude and Fractionated (F2) extracts inhibited the proliferation of MDA-MB-231 cells in a dose- and time-dependent manner. Treatment of MDA-MB-231 cells with crude and F2 extracts resulted in a significant reduction in cell migration, as compared to vehicle control. Cell cycle analysis was also assessed by flow cytometry. Since the phosphatidylinositol 3-kinase(PI3K)/Akt is the signalling pathway frequently implicated in oncogenic transformation in breast cancer, the phosphor-Akt protein levels were also determined. Taken together, our study suggests potential therapeutic effect of *Eucalyptus* spp. bark extracts against an aggressive breast cancer cell model.

References:

[1] Rencoret, J., et al (2007) *Holzforschung*, 61:165 – 174.

[2] Domingues, R., et al (2011) Cellulose Chem. Technol., 45: 475 – 481.

[3] Domingues, R. M. A., et al (in press) Mini-Rev Org Chem.